

# **Performance Evaluation and Standardisation of Hexacopter Unmanned Aerial Vehicle (ANGRAU – Pushpak) Spraying in Managing Leafhoppers in Cotton**

**A Sambaiah, G Diana Grace, Ch Madhuri, K Purna Chandra Rao and  
N Venkata Lakshmi**

Centre for Andhra Pradesh Sensors and Smart Applications Research in Agriculture (APSARA),  
ANGRAU, Lam, Guntur, Andhra Pradesh

## **ABSTRACT**

Application of pesticides and chemicals are essential to control pests and diseases for sustainable yield in cotton. The Unmanned Aerial Vehicles (UAV) have revolutionized Indian agriculture by optimizing the use of inputs precisely for several purposes like spraying, seeding and fertilizer application and has the potential to reduce the input costs and can have rapid control of pests and diseases effectively by overcoming the labour shortage menace in Indian Agriculture. The precision substance delivery mechanism of UAV spraying offers vast opportunity to reduce the pesticide consumption with maximum bio-efficacy for controlling one of the sucking pests complex i.e., leafhoppers in cotton. The study was conducted at operational research project (ORP) site at Lam village of Guntur District, Andhra Pradesh during kharif 2021 & 2022 in restricted randomized block design. The recommended doses of Flonicamid 50% WG issued by Central Insecticide Board and Registration Committee (CIB and RC) Govt. of India were considered for the evaluation. The treatments imposed were of 100%, 75% and 50% Recommended dose of Pesticide (RDP) with UAV and 100% RDP with human backpack sprayer and a control plot with only water spraying with drone for asserting the efficacy of drone spraying when sprayed at low volume spraying (25 L per ha).

During kharif 2021, Flonicamid 50% WG insecticide was sprayed at 62 DAS (Days After Sowing) and pre and post spraying (3 days after spraying) counts were also recorded. Treating the cotton crop with 100% RDP (T1), 75% RDP (T2), 50% RDP (T3) with UAV and 100% RDP with human back pack sprayer (T4) and control (T5) reduced number of leafhopper per 3 leaves from 16.62 to 3.5, 16.75 to 5.02, 17.00 to 9.25, 17.00 to 7.05, 16.8 respectively with a percent reduction over control of 78.57%, 70.09%, 44.34% and 58.04% respectively. During kharif, 2022, imposition of treatments at 66 DAS reduced number of leafhoppers per three leaves from 13.75 to 2.62, 14.75 to 3.65, 13.75 to 10.5, 14.5 to 6.00, 14.75 to 15.25 in respective treatments with a percent reduction over control of 82.79%, 76.07%, 31.15 and 60.66%. The dosage of insecticide Flonicamid 50% WG with 75% RDP using UAV sprayer at the rate of 90 gm acre<sup>-1</sup> was effective in controlling leafhoppers in cotton.

**Key words:** *Amrasca biguttula biguttula, Cotton, Flonicamid 50% WG and UAV spraying*